REMARKS

The present application was filed on September 23, 2003 with claims 1 through 23. Claims 1 through 23 are presently pending in the above-identified patent application.

In the Office Action, the Examiner rejected claims 1-4, 6-20, and 22-23 under 35 U.S.C. §103(a) as being unpatentable over Worster (United States Patent Number 6,028,840), and further in view of Mitra (United States Patent Number 5,909,547), and rejected claims 1-4, 6-20, and 22-23 under 35 U.S.C. §103(a) as being unpatentable over Elwalid et al., "A New Approach for Allocating Buffers and Bandwidth to Heterogeneous, Regulated Traffic in an ATM Node," and further in view of Li et al. (United States Patent Number 5,757,771). The Examiner also indicated that claims 5 and 21 would be allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims.

The present invention is directed to a method and apparatus to regulate the admission control of, and requests for routing of, virtual circuits in a network by determining network resource requirements for the virtual circuits. The method is generalized for the shared-memory architecture of a network node, to allocate a buffer size value, B_i, to an output port, i, for use in the effective bandwidth computation. A static allocation policy is utilized to allocate the available buffer, B_{SMF}, to each output port, i. The allocated buffer is determined by selecting a value from a range having a lower bound obtained by partitioning the buffer, B_{SMF}, to evenly divide the buffer space among all the output ports, such that $\sum_i B_i = B_{SMF}$; and having an upper bound obtained by using the total available buffer, B_{SMF}, for each port in their computation of effective bandwidths.

Independent Claims 1, 11, 22 and 23

Claims 1, 11, 22, and 23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Worster, and further in view of Mitra, and were rejected under 35 U.S.C. §103(a) as being unpatentable over Elwalid et al., and further in view of Li et al.

Regarding the first rejection, the Examiner asserts that Worster discloses a method and apparatus for connection admission control, but acknowledges that Worster is generally silent on both the location and the type of the buffer memory used and is deficient to the claim in the limitation of "allocating a portion, B_i, of said buffer to each of said output ports." The Examiner

asserts that such a claim limitation of allocating a portion of the buffer to each of the output ports would have been obvious to a skilled artisan prior to Applicants' invention. The Examiner further asserts that it would have been obvious to a skilled artisan prior to Applicants' invention to also base the "same equation" on an individual buffer for a shared buffer space as is known in the art based on the *combined teachings of Worster in view of Mitra* (emphasis added).

Applicants note that, as the Examiner acknowledges, Worster does not suggest or disclose "provisioning a portion, B_i, of said buffer to each of said output ports." Thus, Worster does ***not*** *disclose or suggest a buffer portion* B_i and can therefore not disclose or suggest determining buffer space requirements from a set of parameters, wherein a ratio of said effective buffer space requirement b_0 to *said allocated buffer size* B_i is substantially equal to a ratio of said effective bandwidth requirement to said link bandwidth capacity C, as required by each of the independent claims.

Applicants also note that, although Mitra does "determine a provisional allotment of buffer memory space for output ports" in step 415, Mitra does not disclose or suggest determining buffer space requirements from a set of parameters, wherein a ratio of said effective buffer space requirement b_0 to said allocated buffer size B_i is substantially equal to a ratio of said effective bandwidth requirement to said link bandwidth capacity C, as required by each of the independent claims.

Independent claims 1, 11, 22, and 23 require determining "buffer space requirements from said set of parameters, wherein a ratio of said effective buffer space requirement b_0 to said allocated buffer size B_i is substantially equal to a ratio of said effective bandwidth requirement to said link bandwidth capacity C."

Thus, Worster and Mitra (alone or in combination) do not disclose or suggest determining "buffer space requirements from said set of parameters, wherein a ratio of said effective buffer space requirement b_0 to said allocated buffer size B_i is substantially equal to a ratio of said effective bandwidth requirement to said link bandwidth capacity C," as required by independent claims 1, 11, 22, and 23.

Regarding the second rejection, the Examiner acknowledges that Elwalid is silent or

deficient to the concept of partitioning a common queue into subqueues where each subqueue is dedicated to a specific out port, but asserts that Li teaches that a "common queue can be partitioned into subqueues, one for each output, where size of the subqueue changes dynamically."

Applicants note that the present invention provisions a buffer size to each buffer, regardless of the number of cells currently in the buffer. Applicants note that, in all embodiments, Li teaches that the size of a subqueue is dynamically adjusted to equal the total size of cells (data packets) that are currently in the subqueue. Li teaches that "the buffer memory is divided into data sub-queues, each data sub-queue containing ATM cells or other fixed-size digital data packets of a class of service, such as data or voice traffic, and having certain priority levels in terms of output and purging, wherein *the length of the data sub-queue is dynamically apportioned to be equal to the length necessary to hold the cells of that particular type of data input at any* ***particular time.***" (Col. 4, lines 17-24; emphasis added.) Although age and size ratio thresholds are disclosed by Li, they are only used to determine when and how frequently to service (transmit a cell from) a queue. The size of the queue is still based on the *number of cells in the queue*, and ***not*** *based on a provisioned buffer size*. Thus, Li actually teaches away from the present invention and a person of ordinary skill in the art would not look to combine Elwalid et al., and Li et al.

Thus, Worster, Mitra, Elwalid et al., and Li et al. (alone or in combination) do not disclose or suggest determining "buffer space requirements from said set of parameters, wherein a ratio of said effective buffer space requirement b_0 to said allocated buffer size B_i is substantially equal to a ratio of said effective bandwidth requirement to said link bandwidth capacity C," as required by independent claims 1, 11, 22, and 23.

Dependent Claims 2-10 and 12-21

Dependent claims 2-4, 6-10, and 12-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Worster, and further in view of Mitra, and claims 2-4, 6-10, and 12-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Elwalid et al., and further in view of Li et al.

Claims 2-10 and 12-21 are dependent on claims 1 and 11, respectively, and are therefore patentably distinguished over Worster, Mitra, Elwalid et al., and Li et al. (alone or in any

combination) because of their dependency from independent claims 1 and 11 for the reasons set forth above, as well as other elements these claims add in combination to their base claim. The Examiner has already indicated that dependent claims 5 and 21 would be allowable if rewritten in independent form including all of the limitations of the base claims.

All of the pending claims, i.e., claims 1 through 23, are in condition for allowance and such favorable action is earnestly solicited.

If any outstanding issues remain, or if the Examiner has any further suggestions for expediting allowance of this application, the Examiner is invited to contact the undersigned at the telephone number indicated below.

The Examiner's attention to this matter is appreciated.

Respectfully submitted,

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